

RELEASE NOTES FOR MEPDG Version 1.1 – September 2009

Before installing the MEPDG Version 1.1 make sure to uninstall all previous version of the MEPDG software. The MEPDG Version 1.1 is able to open and save previous MEPDG project files, but the current file format is not backwardly compatible with previous versions (Version 1.1 files cannot be opened in Version 1.0 and earlier).

It is recommended that the MEPDG be installed to the default directory. Long MEPDG project path and file names can cause the Thermal Cracking module to report no cracking. The use of the default installation and project directories, keep project path names shorter.

Issues have been reported with using Version 1.100 with certain firewalls and virtual private networks (VPN). Network firewalls may keep the MEPDG from connecting to the Transportation Research Boards license server. Adding the MEPDG (dg2k2.exe) to the “Allow HTML Connection” list will allow the MEPDG to connect to the server. Cisco VPN software has been reported to cause problems with MEPDG operation due to memory conflicts.

The following changes and improvements have been made to the MEPDG since the last official release in April 2007.

- Improved reports for AC over JPCP to output reflection cracking prediction properly.
- Improved reports for AC over CRCP to output reflection cracking prediction properly.
- Improved ICM stability by additional checks on model inputs.
- Variable ICM time-step and nodal spacing to better model thin bonded PCC overlays of existing JPCP.
- For AC over JPCP design, changed the method of JPCP damage analysis from a two-layer equivalent analysis (pavement/base) to a three-layer equivalent analysis (AC/PCC/base). The three-layer analysis method takes into consideration the stresses at the top and bottom of the PCC layer, as well as determination of the equivalent temperature gradients through the asphalt layer.
- For bonded JPCP over JPCP design, the original approach utilized an equivalent two-layer system with several deficiencies, including one input for thermal expansion coefficients for both layers, the use of equivalent modulus instead of actual modulus for determination of strength and damage, and there was no conversion from top and bottom stresses of equivalent systems into stresses on the top and bottom surfaces of the concrete. In the modified approach, a three-layer analysis (JPCP/JPCP/base) is used that addresses these issues.
- Fixed bug associated with the use of widened lanes. A deficiency in the fatigue damage algorithm was identified for JPCP in which the proper damage calculation was not performed over the total range of widening. In the new version of the software, after 6 inches of widening, the critical fatigue location correctly shifts from the outer slab edge of the widened portion to the inner slab edge near lane-to-lane longitudinal joints.
- Users can now modify AC IRI calibration constants.
- Joint spalling model: The spalling model included in the MEPDG is an empirical model based on data collected primarily from the NCHRP 1-19, FHWA RPPR, and FHWA PRS projects. The time period over which the data was collected on these models does not extend beyond 25 years. Considering that pavement age is a primary variable in this empirical model, the spalling calculations in this version of the software have been capped at a 25-year value for

projects with design lives greater than 25 years. For projects with design lives less than 25 years, this modification will not have an impact.

- Sealant type: Sealant type affects joint spalling predictions. However, the spalling model behaves exactly the same way for all sealant types (including for the no sealant option) with the exception of a Preformed sealant. Hence the Sealant Type pull down menu has been simplified to include only two options—Preformed and Other—as compared to the four options previously available—None, Liquid, Silicone, Preformed.
- The default long-term lane-shoulder load transfer efficiency (LTE) has been set to 50 percent for tied joints.
- A license check fix allows the MEPDG to utilize the Transportation Research Board's new content server.
- Set minimum PCC layer thickness to 1.5 inches for bonded PCC overlays.

In addition to these significant improvements, several small interface bug reports have been addressed.